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DOE-0799-01

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF RESPONSES TO THE OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM PLAN AND OPERATING PROCEDURE, AND LEACHATE MANAGEMENT CONTINGENCY PLAN FOR THE ON-SITE DISPOSAL FACILITY

Reference: Letter from T. Schneider, OEPA, to J. Reising, DOE-FEMP, "Formal Transmittal of Comments on Three Enhanced Permanent Leachate Transmission System Documents," dated August 1, 2001

The subject comment responses are enclosed with this letter. The comments were received via the noted reference. Please review the responses and associated actions. Once resolution of the comments is reached, the revised plans and procedure will be provided.

If you have any questions regarding the responses, please contact Jay Jalovec at (513) 648-3122 or Robert Janke at (513) 648-3124.

Sincerely,

Johnny Reising

FEMP:Jalovec

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosure: As Stated

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cc w/enclosure:
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N. Hallein, EM-31/CLOV
R. J. Janke, OH/FEMP
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M. Jewett, Fluor Fernald, Inc./MS52-5
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T. Walsh, Fluor Fernald, Inc./MS46
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RESPONSES TO OEPA COMMENTS ON THE SYSTEM PLAN FOR THE COLLECTION AND MANAGEMENT OF LEACHATE FROM THE ON-SITE DISPOSAL FACILITY
2011-PL-0001

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

JULY 2001

U.S. DEPARTMENT OF ENERGY

RESPONSES TO OEPA COMMENTS ON THE SYSTEM PLAN, COLLECTION AND MANAGEMENT OF LEACHATE FOR THE ON-SITE DISPOSAL FACILITY 2011-PL-0001

Original Comment

1. Commenting Organizations: OEPA | Commentor: OFFO
Section #: General: Pg. #: | Line #: Code: C

Comment: The text states that the LTS is monitored at the Control Valve House. Provide a more detailed description of the operation of the system. Indicate the information available to the AWWT operator (alarms and details of displays, etc.). Also indicate which information if available at the Control Valve House and which information must be obtained at the individual valve houses. Also indicate the frequency which operators inspect the valve houses.

Response: The scope of the System Plan (2011-PL-0001) is to establish the inspection, monitoring, and maintenance requirements to achieve the proper performance of the LCS and LDS. ARWWP Standard Operating Procedure 43-C-372 establishes operational details for the system and documents compliance with requirements specified in the System Plan. Frequency of inspection is specified in Table 3-1 of the System Plan and in the SOP.

Action: None Required

2. Commenting Organizations: OEPA | Commentor: OFFO
Section #: 1-5 Pg. #: 1-2 | Line #: Code: C

Comment: This section describes the responsibilities of the various departments. We note that the Hydrogeology Manager is responsible for measuring flow rates and Operations Manager is responsible for operations, maintenance, inspection, etc. This seems to be a combersome organization. For example, the Hydrogeology Department is responsible for measuring LCS flows but the Operations Department is responsible for adjusting the individual flow so that the total flow is 200 gpm.

Response: Operations personnel are responsible for the operations, maintenance, monitoring and inspection of the system. This includes recording and monitoring flow data. The Hydrogeology Manager is responsible for evaluating the collected data and filing the required reports as well as monitoring flows into the LCS & LDS tanks.

Action: On Page 1-2 the term "Monitoring" will be removed from Hydrogeology Manager responsibilities. The following item will be added to the Hydrogeology Manager's list of responsibilities: Monitoring of flows into and out of the LCS and LDS tanks.

3. Commenting Organizations: OEPA | Commentor: OFFO
Section 1-5 Pg. #: 1-2 | Line #: 1st bullet under the Operations Mgr. Responsibilities Code: C

Comment: This bullet lists monitoring as one of the Operations Manager responsibilities. What specifically does the Operations department monitor?

Response: The Operations Manager monitors daily operations of the EPLTS System which includes flow data, alarm status, maintenance concerns, monitoring port inspection results, and general system status as required by the SOP.

Action: None Required.

4. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3-1 Pg. #: 3-1 Line #: 4th bullet Code: C

Comment: This bullet explains that LDS flows can be directed to the LTS when construction water is draining. The flows from the LDS can be subsequently routed to the containment tank when these flows decrease. The second bullet in Section 3.2 states that when the LDS flow is less than 10 gpm, waste can be placed in the cell and operations can be turned over to the ARWWP.
[The remainder of the comment is two separate questions which are noted and addressed separately below:]

Comment [4A] Where (to treatment or discharge) will the flows from the LDS and LCS be directed prior to waste placement?

Response [4A] The OSDF construction contractor will be responsible for disposing of water from the work area up to the point where his work for the LDS is deemed complete. At that time, the LDS valving will be opened and any residual construction water will be allowed to flow to the LTS. The residual construction water that flows to the LTS system will be handled as leachate.

Action: None Required

Comment [4B] A strategy should be developed to measure the flow of construction water from the LDS. These flows should be compared to the accumulated rainfall that accumulates in the LDS drainage layer during constructions.

Response [4B] See response to above comment #4A. All flows will be measured from the time the valves are opened and flow to an individual Valve House commences. Outside of the procedures, the data will be reported in the IEMP where a rainfall comparison will be presented as has been done for Cell #3 in the past. No data regarding construction flows will be collected or reported by ARWWP as this is outside of the scope of LMS operation.

Action: None Required

5. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3-1 Pg. #: 3-1 Line # 6th bullet. Code: C

Comment: The text states "Flow may need to be regulated during OSDF construction, impacted material placement, periods of gravity line maintenance, extension, repair, etc." We find this sentence confusing. Delete it and replace it with "Flow may need to be regulated during storm flow conditions, and when the LTS lines are down for reasons of maintenance, extension, repair, etc."

Response: Agree. This sentence will be revised as suggested.

Action: System Plan will be revised as suggested.

6. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3-1 Pg. #: 3-2 Line #: 5th bullet. Code: C

Comment: This bullet is a more-or-less general statement of the operation intent of the EPLTS. It is not specific enough for an operator to know what to do in a storm flow condition. Suppose a one inch rainfall occurs as the OSDF is configured today. This would result in over a half million gallons of rainwater. At 200 gpm, it would take nearly two days for the PLS to pump out the flow. Based on this scenario, we have the following questions:
[The remainder of this comment is six separate questions which are noted and addressed separately below:]

Comment [6A] What are the initial valve settings during non-storm flow conditions? That is, are the valves typically maintained in the wide open position?

Response [6A] Initial settings for the valves are detailed in the Baseline Valve Line-Ups in the operations procedure. Typically valves would be maintained in the full open or full shut condition with the exception of when throttling flow to the PLS.

Action: None Required.

Comment [6B] Are we correct in our understanding that flows will be throttled with the ball valves in the LDS lines in each Valve House?

Response [6B] No. The procedure states that the flows will be throttled in each valve house using the 6-inch knife gate valves.

Action: None Required

Comment [6C] Are we correct in our understanding that the design intent of the OSDF is to store excess water within the confines of the cells rather than in the LTS lines?

Response [6C] Essentially, your comment as stated is correct. However, there is minimal excess volume in the LTS lines when they are flowing at a rate of 200 gpm. The intent is to restrict flow from the cells to the LTS lines to approximately 200 gpm so that the PLS operates under essentially steady state conditions. This will minimize the high-level control valve in the CVH from fluctuating back and forth, which results in surcharging of the LTS. The operational intent is to maintain the free flow of leachate from cells as much as reasonably achievable and within pumping limits of the PLS.

Action: None Required.

Comment [6D] If this is the case, how is it determined that flows are not backed up in the LTS line from the PLS to the cells?

Response [6D] Controlling the valves would normally result in excess water being held within the confines of the cells rather than in the LTS lines. However, because the driving hydraulic head in each cell will be changing constantly during significant storms, the flow may, at times, increase above the 200 gpm desired flow rate. At these times, the flow may back up into the LTS line and reduce the flow(s) from one or more of the cells closest to the PLS. The change in flow rate would not be expected to be significant enough to require readjustment of valves. However, if the ponding in the cells becomes significantly unbalanced, the valves will be readjusted to favor those cells where excessive or undesirable ponding occurs. As explained above, the LTS may be partially backed up during significant storms as the flow may exceed the PLS pumping rate. No monitoring of such a backup will occur, nor do we believe such monitoring is required. If cell catchment area ponding becomes detrimental to cell operation, valve repositioning may be implemented in order to achieve leachate transfer goals and proper cell loading.

Action: None Required.

Comment [6E] When would the operator adjust the valves? Every shift or every day? Would adjustments be made based on weather forecasts of a storm?

Response [6E] Valves would only be adjusted when unequal or undesirable ponding is observed in open cells. In addition, valves may be opened further if, as explained above, flow from the Valve Houses to the PLS is significantly less than 200 gallons per minute as measured by Flow Indicator FQI-1002 at the Control Valve House

Action: None Required

Comment [6F] Can the operation of the PLS pumps be monitored at the AWWT control room?

Response [6F] Some aspects of their operation can be monitored from the AWWT Control Room. A 24-hour circular strip chart indicates flow from the PLS to the BSL and current visual flow rate is observable. However, pump run status must be inferred from flow rate and PLS level cannot be observed from the AWWT Control Room.

Action: None Required.

7. Commenting Organizations: OEPA Commentor: OFFO
Section #: Figure 3-1 Pg. #: 3-3 Line #: Code: C

Comment: It would be helpful to have valve house schematics which show the positions of the valves in different operational scenarios. Scenarios of interest are:

- Prior to waste placement when construction water is draining through the LDS lines

- After LDS flows have stabilized and the LDS collection tank is in use
- During storm flow conditions. Indicate which of the ball valves is used to throttle flows.

Response: Valve positions for different operational scenarios is an operations issue and, as such, valve alignments are included in Standard Operating Procedure 43-C-372, "Enhanced Permanent Leachate Transmission System Operations". The scenarios in the revised operating procedure indicate "bypass tank" or "thru tank". The bypass of the LDS tank to dispose of and trend construction water flows will primarily occur prior to active waste placement in the individual cells. Active waste placement will not occur until LDS flow is verified to be less than 10 GPM. After turnover, the procedure addresses proper valve alignments. Throttling LCS valves is also an operations process and is addressed in 43-C-372. NOTE: Flow will be throttled using knife gate valves.

Action: None Required.

8. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3.2 Pg. #: 3-4 Line #: 2nd bullet Code: C

Comment: It is not clear who operates the system prior to turnover to the FEMP.

Response: The EPLTS System is not operated by ARWWP Operations until turnover from Construction is completed. Site Procedure OP-1033 requires a disciplined process for the Startup/Turnover evolution. For this particular project, SSR Plan 2011-SSR-0001 was the approved document that guided, documented and evaluated the process.

Action: None Required.

9. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3.2 Pg. #: 3-4 Line # 2nd bullet: Code: C

Comment: From the design of the valve houses we infer that LDS water prior to the placement of wastes in the OSDF is routed to treatment via the LMS. What are the considerations which prevent this water from by-passing treatment?

Response: Once routed to the LMS, all water will be handled as leachate and treated via the BSL. Also, it should be noted that this is a relatively small volume of water as it occurs after tie in of cell to LTS, and prior to waste placement. See response to comment [4A].

Action: None Required.

10. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3.2 Pg. #: 3-4 Line #: 3rd bullet Code: C

Comment: At 0.5 gpm, the 300 gallon tank would fill every 10 hours. How frequently are the Valve Houses inspected by an operator?

Response: The system plan mandates that the valve houses will be checked "not less than once per day". This wording was used specifically to permit inspections more frequently (i.e., when one or more individual LCS inflows are close to 0.5 gpm resulting in a tank(s) filling more often than once per 24 hours), but at the same time not requiring checking at a frequency more than once per day if not required. The System Plan still requires a check at least once per day.

Action: The Standard Operating Procedure has been expanded to include "The Supervisor will direct that specific tanks be checked more frequently if the flow rate into the tank indicates that the tank may need to be pumped more than once per day".

11. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3-2 Pg. #: 3-4 Line #: 7th and 8th bullets Code: C

Comment: We commented on the third bullet in this section that the tank will fill every 10 hours yet bullets 7 and 8 imply that inspections will be performed daily. Either the inspection frequency or the timing of the deployment of the LCS tank must be modified.

Response: See response to comment 10

Action: See action to comment 10.

12. Commenting Organizations: OEPA Commentor: OFFO
Section #: 3-2 Pg. #: 3-6 Line #: 1st bullet Code: C

Comment: This Spring the flow through the catchment area into the LCS was greatly enhanced by power washing the filter fabric. This option should be explored prior to making the determination that the catchment is clogged.

Response: Agree

Action: The text will be revised to state "If the system becomes inoperable (*e.g.*, continuous ponding conditions in the catchment area are due to clogging of the sacrificial geotextile) the OSDF Construction Manager shall power wash the filter fabric, after removing impacted runoff by pumping from the impacted runoff catchment area to the adjacent cell catchment area or to quick connect hose couplings located along the reconfigured ILTS line as further described in the "Leachate Management Contingency Plan For the On-Site Disposal Facility".

13. Commenting Organizations: OEPA Commentor: OFFO
Section #: Table 3-1 Pg. #: Line #: Code: C

Comment: The remedy for finding liquid in the annular spaces is to check for the source of the leak. The liquid should be analysed for total uranium to help assess the source of the liquid.

Response: See response to comment 3 on the Contingency Plan. The Operating Procedure (43-C-372) has been revised to direct sampling for the water collected from the monitoring ports and analyzed for total uranium.

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Action: Procedure revised as noted in response

14. Commenting Organizations: OEPA Commentor: OFFO
Section #: Table 3-2 Pg. #: 3-11 Line #: Code: C

Comment: The top row of the table states that the valve houses will be checked weekly during the active period. This conflicts with the text which indicted the valve houses will be inspected daily.

Response: Agree. The System Plan, Table 3-2, will be revised to indicate that inspections will take place at least one time per day, during the active period.

Action: System Plan to be revised as noted in response.

15. Commenting Organizations: OEPA Commentor: OFFO
Section #: Table 3-2 Pg. #: 3-11 Line #: Code: C

Comment: The bottom row of the table states that the condition of level transmitters, flow meters, ventilation systems, alarms, etc. will be checked semi-annually. This is confusing. Rephrase the text so that it is clear that these devices are being checked to verify that they are operating properly

Response: Compliance with the requirements to check the condition of instrumentation, flow meters, etc., is achieved by establishing a preventative maintenance program for the equipment and managing the program through the Maintenance Tabware System. A maintenance work package is generated automatically every 6 months for each specified component along with the appropriate Maintenance Work Instructions. Obvious operational problems with individual items will be noted by Operations staff during daily rounds. Work orders for needed repairs will be initiated as required.

Action: None Required.

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RESPONSES TO OEPA COMMENTS ON THE ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM OPERATIONAL PROCEDURE 43-C-372

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

JULY 2001

U.S. DEPARTMENT OF ENERGY

RESPONSES TO OEPA ON THE ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM OPERATIONAL PROCEDURE 43-C-372

Original Comment

1. Commenting Organizations: OEPA   Commentor: OFFO
   Section #:   Pg.#:   Line #: Code: general

   Comment: The attachments to this plan address "Baseline valve line-up for uncapped cells" (Attachment D) and "Baseline valve line-up for capped cells" (Attachment E). We see a need for valve line-ups for two more situations:
   1. New cell with high flows in the LDS from draining construction water. We see the need for two examples of this scenario if clean water prior to waste placement bypasses treatment.
   2. Storm flow conditions when the entire system is throttled to achieve the 200 gpm storm flow volume.

   Response: 1. Systems Plan 20111-001, Rev 0, Section 3.2 describes LDS flow rate requirements (<10 gpm) prior to turnover from Construction to Operations, therefore, the valve line up until this flow rate is achieved is not described in the Standard Operating Procedure. The OSDF construction contractor will be responsible for disposing of water from the work area up to the point where his work in LDS is deemed complete. At that time, the LDS valving will be opened and any residual construction water will be allowed to flow to the LTS system. The residual construction water that flows to the LTS system will be handled as leachate. Therefore, since this water will not by-pass treatment, no change is needed to the attachments.

   2. The procedure has been revised to include recording flow rates at each valve house along with total flow as observed at FQI-1002 in the CVH and to identify the valve (valves) to be used for throttling flow should the need arise. If the flow from the Leachate System is greater than 200 gpm, the supervisor will be notified. The supervisor will direct if further re-throttling is required. Only Valve Houses that are allowing flow to bypass the LCS tank will be throttled. The driving hydraulic head in each cell will be changing constantly during/after significant storms, the combined LTS flow may, at times, increase above the 200 gpm desired controlled rate. The change in flow rate would not be expected to be significant enough to require immediate readjustment of valves. However, if the ponding in the cells becomes significantly unbalanced or undesirable, the valves will be readjusted to favor those cells where excessive or undesirable ponding occurs

   Action: Procedure revised as noted in response to sub item 2.

2. Commenting Organizations: OEPA   Commentor: OFFO
   Section #: Attachment D   Pg.#: 18 of 31   Line #: Code: C

Comment: This and the other valve line-up tables use the term "leachate detection system". This is the first time that we have seen the "leak detection system" called by this name. We believe this could lead to confusion and we suggest revising the entire document and replacing all uses of the term "leachate detection system" with "leak detection system".

Response: Agree - the term "leachate detection system" has been replaced with "leak detection system"

Action: Procedure has been revised as noted in response.

3. Commenting Organizations: OEPA Commentor: OFFO
Section #: Attachment "D" Pg,#: 18 of 31 Line #: Code: C

Comment: The tables in this section show that the 3 inch ball valve to the 300 gallon containment tank (V*-15) are closed. Why isn't this valve in the open position to allow water in the LDS line to drain unimpeded into the collection tank? These valves are in fact "open" in the Attachment E Capped Cells scenario.

Response: Valve V*-15 is closed to permit flow to by-pass the LDS collection tank. The System Plan (Section 3.2, 2nd bullet) states that once $\leq$ 10 gpm is achieved, the operation of the LCS and the LDS can be turned over to ARWWP. At 10 gpm, if the tank is used, it will need to be pumped every 30 minutes. Such an arrangement is deemed impractical. The procedure as originally written called for use of the LCS collection tanks when the cell is capped. It has been revised to make the switch when the flow meters can no longer measure the flow. Based on our recent experience with Cell 1, this will occur much sooner than when the cell is capped.

Action: The procedure has been revised to specify that as long as flow meters continue to read and totalize flow, operations will by-pass the collection tanks. When the gravity flow of leachate becomes so low that the flow meter/totalizer will no longer measure, the leachate will be diverted to the 300 gallon (LCS or LDS as appropriate) tanks located in each valve house. The correct flow routing for each system in each Valve House will be specified by the ARWWP Operations Manager's Operating Orders.

4. Commenting Organizations: OEPA Commentor: OFFO
Section #: Attachment A Pg.#: 15 of 31 Line #: Code: C

Comment: The valve house round sheet does not have a line to inspect or test the check valves. These have failed in the past on more than one occasion. Are there simple tests that can be performed on a regular basis to evaluate whether the valves are working properly? We devised a scheme to test check valves in the LDS and LCS lines using leachate to surcharge the system. This test is beyond the scope that an operator would be expected to perform alone during weekly rounds but we believe it could be easily implemented on a regular basis. To test the check valves in Cells 2 and 3:

1. Close ball valves from cell laterals (V-*I4 in LCS and V-*34 in LDS) for all three cells 1, 2 and 3.
2. Drain the lines at V-*17 and V-*37
3. Close the knife valve in Cell 3
4. Open the valve from the LCS line in Cell 1 (V-I 14) to surcharge the LTS upstream of the closed valve in Cell 3.
5. Look for leaks from the drain valves V-*I7 and V-*37

This scheme uses leachate from Cell 1 to surcharge the system. To test the check valves in VH-1, the system could be surcharged using clean water introduced through the vent at the high point in VH-1. Whatever test is chosen should be performed at a regular interval.

Response: Inspection of check valves is a maintenance activity and is not covered in the Standard Operating Procedure. The check valves are included in the Preventative Maintenance Program and scheduled for inspection every 6 months. Since this type of check should not be performed as part of a round sheet inspection, it is inappropriate to include on the round sheet(s).

Action: None required.

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RESPONSES TO OEPA COMMENTS ON THE LEACHATE MANAGEMENT CONTINGENCY PLAN FOR THE ON-SITE DISPOSAL FACILITY

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

JULY 2001

U.S. DEPARTMENT OF ENERGY

Responses to Ohio Environmental Protection Agency Comments on the Leachate Management Contingency Plan for the OSDF

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Original Comment #: 1

Comment: Determining action levels has been problematic for all parties. In our informal comments submitted earlier, we offered a discussion that would tie action levels to *uncertainty* in the pressure test method. We considered that uncertainty in the actual pipe temperature would drive uncertainty in the volume of make up water required. We estimated that an error of 5F in estimating the temperature of the pipe would result in an *uncertainty* in the correct volume of make-up water that is an order of magnitude smaller than the action level proposed in the Contingency Plan.

Our concern about uncertainty in the test temperature is not alleviated by the formal submittal of revision 2 of the Contingency Plan. Step 1 of Appendix B states that the temperature of the pipe is measured by placing a thermometer a distance of eight feet inside the containment pipe. We still maintain that the proper test temperature should be the temperature of the water inside the pipe. This water comes from the GMA well located near the borrow area and 50F is generally accepted as ground water temperature. If the assumed test temperature is lower than actual, the relaxation of the pipe will more than estimated. This could result in a false failing test. If the assumed test temperature is higher than actual temperature, the relaxation of the pipe will be less than estimated. This could result in an actual leak being interpreted as being the result of relaxation, i.e. a false passing test.

The AWWA test procedures we have seen do not contain the details that are typically found in ASTM methods, for example. The AWWA provides no information on precision, bias, repeatability or reproducibility. An understanding of the repeatability of the hydrostatic pressure test might give us a handle on the order of magnitude of the action levels. Unfortunately, the AWWA test procedures are no help.

The AWWA does not offer a discussion of the costs/benefits of constructing HDPE drinking water supply systems. Certainly the implications of leaking a few gallons per day of potable water from a system designed to carry millions of gallons are different from the implications of losing several gallons per day of leachate from a low-level waste disposal facility.

The Action levels as proposed have another deficiency in that they really involve only one stage, i.e. the action level triggers a re-test and no further action is proposed if the section passes another pressure test. The proposed action levels are a one size fits all approach. We propose a strategy of multiple triggers that call for progressively more aggressive actions depending on the volumes of water that are observed. We also see the need for different courses of action depending on which system (LSC, RLCS, LDS or PS-1 through -7) is being monitored.

Our strategy for the Pipeline segments (PS) between the various valve houses, the CVH and the PLS is outlined first. The first trigger should be sat at 10% of the values listed in Table A1. The corresponding action should be chemical analysis of the water for total uranium. This should be performed at the first observation of water in excess of the trigger. Observations of water at these volumes would not require further action (beyond continued monitoring at the weekly intervals) as long as there appears to be no correlation between volumes in the container pipe and the number of times the system surges. If these volumes are erratic (that is the weekly observations do not correlate with the duration that the system was pumping under storm flow conditions), and the total uranium does not appear to correlate with the concentration in the leachate, no further action beyond continued monitoring would be required.

The second trigger would occur if either a strong correlation with the surge frequency or if the total uranium in the water is indicative of leachate. This would trigger a hydrostatic pressure test. If the pressure test is completed satisfactorily, no additional response would be required. A failing pressure test would trigger fixing the pipe unless all parties could agree that the leak is de minimis. We envision the water volumes at this range to be roughly the same as the first trigger, i.e. 10% of the volumes in Table A1.

A third trigger would occur when three things happen.

1.) Leak quantities approach those in Table A1.
2.) Uranium concentrations are consistent with the liquid being leachate.
3.) There is a strong correlation between quantity of water observed and duration that the system operated under surge conditions.

These observations would trigger repairs to the system.

The discussion above is most applicable to the sections between the valve houses. The LDS lines are not subjected to the surge pressures as long as the check valves in the lines operate as intended. Quantities of water found in the container pipe would not be expected to correlate with surges in the EPLTS but with water found in the LDS.

Triggers applicable to the LDS lines should be developed considering the volume and chemical analysis of water in the LDS line. We propose the following:

Action levels for the LDS are 20 gallons per acre per day. So during the one week period between monitoring the LDS container pipe, at most (20 gpad X 7 days X 7 acres=)980 gallons of water have flowed . An action level of 0.6 gallons seems quite easily achievable under these conditions of low-volume, gravity flow. If a correlation is found between the total uranium content of the water in the LDS container and the water in the LDS carrier, this should trigger an evaluation of the feasibility of repairing the pipe.

The LCS line is susceptible to surge pressures whereas the redundant LCS line (assuming it is in the stand-by position where it doesn't carry flows) is not subject to surges. The following discussion applies to only the LCS line unless the RLCS has been made operational per the Systems Plan:

The first trigger should be sat at 10% of the values listed in Table A1. The corresponding action should be chemical analysis of the water for total uranium. This should be performed at the first observation of water in excess of the trigger. Observations of water at these volumes would not require further action (beyond continued monitoring at the weekly intervals) as long as there appears to be no correlation between volumes in the container pipe and the time the system was operating under surge conditions.

The second trigger would occur if either a strong correlation with the surge frequency or if the total uranium in the water is indicative of leachate. This would trigger a hydrostatic pressure test. If the pressure test is completed satisfactorily, no additional response would be required. A failing pressure test would trigger fixing the pipe unless all parties could agree that the leak is de minimis. The water volumes to drive implementation of the second trigger would be the same as the first trigger, i.e. 10% of the volumes in Table A1.

A third trigger would occur when three things happen.

1.) Leak quantities approach those in Table A1.
2.) Uranium concentrations are consistent with the liquid being leachate.
3.) There is a strong correlation between quantity of water observed and duration that the system operated under surge conditions.

These observations would trigger repairs to the system.

Response: 1. Testing Temperature

We disagree that a change in 5°F would result in an "order of magnitude" smaller test water make-up requirement; our calculations indicate that the Table Al values would only be reduced by approximately 12% if the temperature were dropped 5°F (Tc = 0.65 at 60°F, Tc = 0.57 at 55°F). We do agree that the test water temperature should be considered as the "proper test temperature" and should be near the existing ambient temperature of the pipe. We propose filling the pipe with test water to atmospheric pressure and allowing a sufficient time (~12 hours) for thermal equalization prior to starting the 4-hour "initial expansion" phase of the test. Also, we propose the use of a temperature probe inside the pipe during the hydrostatic test.

2. AWWA Test Procedure

In the absence of detailed AWWA testing information, the following are proposed:

a. Use high-precision pressure test gauges with span range near the proposed test pressures and with tight span accuracy. The gauges shall be calibrated and recertified annually.
b. Similarly, use high-precision and annually calibrated temperature instrument.
c. Any repeat of hydrostatic testing shall be performed after a 24-hour "recuperation" period.

3. Action Levels

Your proposal on reduced trigger levels (10% of the AWWA-based values presented in the plan) implies that nearly no leakage in the carrier pipes is permitted. Although no leakage is desirable, it is not a technically practical expectation and should not be considered absolutely necessary, even if containment uranium concentrations correspond to carrier concentrations; and especially considering the protection of the environment provided by the outer containment pipes.

Setting action level values lower than the AWWA-based values listed in Table Al is not considered reasonable, as the pipes were installed and tested using this AWWA standard. The proposed AWWA-based action level values are more restrictive (i.e., more protective) than applying a "20 gallons per acre per day" value to each pipe (e.g., for a 400-foot LTS carrier segment, the Table Al action level value is 1.4 gallons/week versus a "20 gallons per acre per day" calculated value of 2.1 gallons/ week).

The AWWA-based action level values for each piping section have been rigorously calculated with respect to numerous factors - length, pressure, temperature, days of maximum pumping, etc. - to arrive at easily understood values for system monitoring and action (i.e., the proposed action level values are not simply a "one size fits all approach"). We believe the progressively aggressive strategy proposed in your comment makes the evaluation process unnecessarily complex.

4. Uranium Analysis
   Containment pipe water uranium concentrations (to date) have provided non-conclusive data to characterize the water as leachate or other water (e.g., local perched water, stormwater, or dust control water) that may be found around the containment pipe. Therefore, uranium analysis results, alone, are not considered a conclusive tool for triggering an action. However, we will continue to analyze samples from the carrier and containment pipes and develop a uranium concentration database, which may be reviewed and used to evaluate possible leak conditions.

5. LDS Action Level
   The action level for the LDS pipe was set at 0.6 gallons/week with the assumption of minimal flow and no surcharging in the carrier pipe. The action level calculation is based on possible migration of water into the containment pipe from the outside surrounding saturated soil. Again, this action level value is more protective than the "20 gallons per acre per day" value calculated for the LDS pipe.

Action:

1. Pressure test criteria in Appendix B shall be revised to incorporate additional requirements as described in comment responses 1 and 2 above.

2. The plan action level values (weekly-accumulated containment pipe volumes) and associated investigation/evaluation process remains unchanged. A statement will be added at end of Section 3.1 on Page 3: "Review of uranium concentrations in the carrier and containment pipes will be performed as part of the operating conditions evaluation."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Original Comment #: 2

Comment: A schematic similar but less detailed than Figure 1 should be developed. It should show the various components of the leachate management system and indicate which of the temporary operating modes that a failure in that component would trigger. The schematic would show, for example, that a failure in the 10-inch containment pipe in section PS-7 would trigger temporary operating mode C2.

Response: The information will be added to Figure 1.

Action: Figure 1 will be revised. The following text will be added in Section 4 at the end of the first paragraph: "Below each pipeline segment (PS-#) shown on Figure 1 is the temporary operating mode (TOM-x) which will be implemented in the event operation under this contingency plan is required."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Original Comment #: 3

Comment: The text does not mention chemical analysis of the liquids that are found in the containment pipe segments. In the past, the uranium content of the water has provided clues whether the water is leaked leachate or infiltration of perched water from the outside of the system. The text should be revised to mention that chemical analysis for total uranium will be performed to assist in diagnosing the origination of water found in the containment piping.

Response: See response to Comment #1 regarding Uranium Analysis.

Action: Add statement at end of Section 3.1 on Page 3: "Review of uranium concentrations in the carrier and containment pipes will be performed as part of the operating conditions evaluation."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.2 Pg #: 8 Line #: 1st complete paragraph Code: c
Original Comment #: 4

Comment: The text lists three options to repair failed containment pipes; 1) installing a new 8-inch containment pipe inside the existing 10-inch containment pipe and then installing a new 4-inch carrier pipe; 2) slip lining the containment pipe, or;3) patching the existing containment pipe from the outside of the pipe.

Option 1 is only appropriate for sections of the LTS that are up-gradient of open cells because of the greatly limited flow capacity of the replacement line. At the current stage of filling the OSDF, this option would only be acceptable for PS-1 because the completely filled cell 1 is the only cell that drains through PS-1. This option must in any case be supported by calculations (or measured flows) that show the new 4-inch line is capable of handling the flow.

Option 2 has been successfully performed at the FEMP and this option is probably the preferred option in any of the scenarios we can imagine.

Option 3 is only implementable if the location of the failure in the containment piping is known. Barring an obvious accident, we believe that it would be quicker and cheaper to slip line the container pipe than to search for the leak.

Response: In general, we agree with your evaluation. However, under Option 3, with new technologies constantly being developed, it may be possible to fill the containment pipe with water and pressurize it and locate the leak. Therefore, we would prefer to leave all options in the text. In any event, the contingency plan states that an action plan will be developed that outlines the repair method, schedule of the repair, downtime expected and costs. This action plan will be submitted to the USEPA and OEPA for approval prior to proceeding with a repair.

Action: None required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.3 Pg #: 8 Line #: step 2 Code: c
Original Comment # 5
Comment: The text does not state explicitly that the carrier pipe will be repaired.

Response: Agree

Action: Statement to be added: "The carrier pipe shall be repaired or replaced, consistent with the action plan approved by USEPA and Ohio EPA."

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.3.1 Pg #: 10 Line #: Code: c
Original Comment #: 6
Comment: This section describes the temporary operation when there is a failure in the section of pipe from the Control Valve House to the Permanent Lift Station. The temporary mode involves placing a 3-inch hose into the container pipe. What is the capacity of the 3-inch hose? What are the plans to throttle flows from the several LCS lines that supply water to this hose to prevent surcharging the system?

The motor control valve will be removed from the system. What will prevent the PLS from being overwhelmed by the flows. Calculations should be performed to demonstrate that the maximum flow through the system as it is restricted by the 3-inch hose will not exceed the capacity of the PLS.

Response: The temporary mode description is incorrect. After the existing carrier pipe is removed (requiring removal of the motor control valve), the motor operated control valve will be reinstalled with temporary hose connections such that the valve will continue to perform.

Action: A step will be added to Temporary Mode C1 which directs reinstallation of the steel piping, flowmeter, control valve, etc. inside the CVH prior to operation of the temporary mode.

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Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.3.2 Pg #: 11 Line #: Code: c
Original Comment #: 7

Comment: We commented on Section 4.1.2 that we did not consider Option #1 viable because the 4-inch line will not carry the design flow. Our doubts that Option #3 are implementable also apply here. Option #2 looks to be the only viable option.

Response: See response to comment number 4.

Action: None required.